



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/616,034

07/10/2003

Kyung-Hun Jang

249/391

9810

27849 7590 09/21/2007

LEE & MORSE, P.C.
3141 FAIRVIEW PARK DRIVE
SUITE 500
FALLS CHURCH, VA 22042

EXAMINER

KAO, JUTAI

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

09/21/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/616,034	JANG ET AL.	
	Examiner	Art Unit	
	Ju-Tai Kao	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-16 and 18-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-13, 20 and 21 is/are allowed.
- 6) ☒ Claim(s) 4, 5, 14-16 and 18 is/are rejected.
- 7) ☒ Claim(s) 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Amendments filed on 5/22/2007 have been entered into prosecution. Claims 1-3 and 17 have been canceled. New claims 18-21 have been entered. The amendments of claims 4 and 12-15 change the scope of the original claims, and new grounds of rejections have been applied to claim 4-5, 14-16 and newly added claim 18. Claims 12-13 are amended to be dependent on allowed claim 6, thus, are now in the condition for allowance.

Response to Arguments

1. Applicant's arguments, see page 11 of the amendment, filed 5/22/2007, with respect to the 35 U.S.C. 101 rejection on claim 14 have been fully considered and are persuasive. The 35 U.S.C. 101 rejection of claim 14 has been withdrawn.
2. Applicant's arguments, along with the features added in the amendment, see page 12-13 of the amendment, filed 5/22/2007, with respect to the rejection(s) of claim(s) 4-5 and 15-16 under 35 U.S.C. 102 and 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Rey et al. (U.S. Pub. # 2005/0036546), which discloses the technique of delaying or discarding P_m-frame PDUs in favor of the retransmission of I-frame PDUs. This feature anticipates the

feature added in the amendments regarding retransmitting the I-frame packets at the expense of lower priority frame to be transmitted.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 4 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng et al. ("A Novel Scheme for Streaming Multimedia to Personal Wireless Handheld Devices") in view of Fukushima et al. (U.S. Patent # 6732313) and Rey et al. (U.S. Pub. # 2005/0036546).

Consider claim 4 and 14, Zheng et al. clearly shows and discloses a computer readable medium (inherently taught) and selective retransmission method, comprising

transmitting packets of an MPEG frame in real-time, checking for any transmission error after the transmission, and retransmitting only packets belonging to a certain type of frame (11. System Model and Proposed Retransmission Scheme, paragraph 2: "MPEG compressed video consists of I, P and B frames. The frames are grouped to form a special structure called Group of Picture (GoP). Each GoP includes an I frame followed by a number of P and B frames...I frame is the most important, while the B frame is the least important...we propose the following retransmission scheme based on errors in the received video stream ... If the number of errored packets in an I frame is higher than an acceptable error threshold for the I frame, the packets belonging to the I frame are discarded, and the I frame is retransmitted from the multimedia server; If the number of errored packets in a P frame is higher than the acceptable error threshold for the P frame, the P frame is discarded and is retransmitted; Errored packets in B frames are discarded and are not retransmitted.").

Zheng et al. does not disclose retransmitting only packets of an I-frame without a corresponding number of non I-frame packets for a subsequent I-frame. However, Fukuskima et al. clearly show and disclose only retransmitting packets that are defined to be at or above a given priority level (Col. 17, lines 37 - 43: "... each packet may be given the frame type, such as I frame, P frame, and B frame, as the additional information, instead of the priority. Further, there are various methods for deciding the packet priority. For example, in the case of a video signal based on the MPEG standard, packets corresponding to I frames may be decided as high priority packets." and Col. 17, lines 30 - 33: 'with respect to error packets affected by transmission errors, only

those having priorities equal to or higher than a predetermined value are retransmitted."). In addition, Rey et al. clearly shows that I-frames are retransmitted without a corresponding number of non I-frame packets for a subsequent I-frame (see "I-frame PDU can be retransmitted before expiring...leads to transmissions or retransmissions of P_m-frame PDUs being delayed or discarded in favor of I-frame PDU transmissions or retransmissions..." recited in paragraph [0051]; wherein the discarded P_m-frame PDUs corresponds to the claimed "corresponding number of non-I-frame packets").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to retransmit only packets whose priority level is at or above a given level, such as the packets belonging to an I-frame, as taught by Fukushima et al., while delaying or discarding the packets with lower priority, such as the P_m-frames, as taught by Rey et al., in the selective retransmission method of Zheng et al. for the purpose of reducing traffic and taking less time to recover from transmission errors.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng et al. ("A Novel Scheme for Streaming Multimedia to Personal Wireless Handheld Devices") in View of Fukushima et al. (U.S. Patent # 6732313) and Rey et al. (U.S. Pub. # 2005/0036546) as applied to claim 4 above, and further in view of Chen et al. (U.S. Patent # 6658019).

Consider claim 5, and as applied to claim 4, Zheng et al. in view of Fukushima et al. do not disclose transmitting I frame packets in an ARQ interval and transmitting packets that are not I frame packets in a non-ARQ interval. However, Chen et al. clearly show and disclose using an ARQ scheme for packets with higher priority and no ARQ scheme for packets with lower priority (Fig. 1 and Col. 2, lines 32 - 36: "The multi- ARQ step \$4 is based on the concept of unequal error protection, wherein video data with different sensitivities are provided with automatic repeat request (ARQ) schemes with different reliabilities or no ARQ scheme." and Col. 3, lines 4 -5: "medium sensitive data: the DCT coefficients of I-frames..." and Col. 3, lines 18 - 25: "For medium sensitive data, a low reliable burst-oriented transfer with time-bounded retransmission ARQ (BTTR-ARQ) scheme is applied thereon to protect data against transmission errors For low sensitive data, since the corrupted data packets of such low sensitive data will result in less visual distortion, no ARQ scheme is applied thereon...").

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use an ARQ scheme for packets having higher priority and no ARQ scheme for packets having lower priority, as taught by Chen et al., in the selective retransmission method as in Zheng et al. in view of Fukushima et al. and Rey et al. for the purpose of providing different levels of error protection -for packets having different priority levels.

7. Claim 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al. (U.S. Patent # 6732313) in view of Rey et al. (U.S. Pub. # 2005/0036546).

Consider Claim 15, Fukushima et al. clearly show and disclose a selective retransmission apparatus that includes a frame detector, a transmission error detector and a retransmission function unit that transmits a retransmission message and a sequence number of a non-received packet according to a detection result from the frame detector and receives the packets through retransmission (Col. 17, lines 37 - 43: "In this first embodiment, each packet may be given the frame type, such as I frame... as the additional information, instead of the priority. Further, there are various methods for deciding the packet priority. For example, in the case of a video signal based on the MPEG standard, packets corresponding to I frames may be decided as high priority packets." and Fig. 2 and Col. 15, lines 53 - 58: "The error packet detection unit 22 detects error packets in which errors have occurred during transmission, and outputs normal packets which have been transmitted without transmission errors. The packet decoding unit 23 receives the normal packets and decodes the coded data of the normal packets." and Col 15, line 63 - Col. 16, line 3: "The packet priority decision unit 25 receives the result of the detection in the error packet detection unit 22 and decides an error packet the priority of which is equal to or higher than a predetermined value. The retransmission instruction output unit 26 outputs a request for retransmitting the error packet which has been decided in the packet priority decision unit 25, toward the transmitting end, by indicating the sequence number of the error packet." and Col. 16, lines 57 - 59: "In this way, the packets from the distribution server are successively transmitted to the terminal (data receiving apparatus) 201...").

Fukushima et al. does not show the non-received I-frame packets are received without a corresponding number of packets of other frame types for a subsequent I-frame.

However, Rey et al. clearly shows that I-frames are retransmitted without a corresponding number of non I-frame packets for a subsequent I-frame (see "I-frame PDU can be retransmitted before expiring...leads to transmissions or retransmissions of P_m -frame PDUs being delayed or discarded in favor of I-frame PDU transmissions or retransmissions..." recited in paragraph [0051]; wherein the discarded P_m -frame PDUs corresponds to the claimed "corresponding number of non-I-frame packets").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to delay or discard the packets with lower priority, such as the P_m -frames, while retransmitting the non-received I-frame packets, as taught by Rey et al., in the selective retransmission method of Fukushima et al. for the purpose of reducing traffic and taking less time to recover from transmission errors.

8. Claim 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al. (U.S. Patent # 6732313) in view of Rey et al. (U.S. Pub. # 2005/0036546) as applied to claim 15 above, and further in view of Mead (U.S. Patent # 5708473).

Consider claim 16, and as applied to claim 15, Fukushima et al. and Rey et al. do not disclose a frame detector that determines whether the frame is an I-frame, a B-frame or a P- frame of an MPEG-2 frame. However, Mead clearly shows and discloses a frame detector that determines whether the frame is an I-frame, a B-frame, or a P-

frame of an MPEG-2 frame (Fig. 1 and Col. 5, lines 51 - 60: "One such set of information is formed by identifying hard-to-code frames, or frames for which prediction fails, using the frame detector 26 ... When a hard-to-code frame occurs, the use of motion-compensated prediction results in both a large prediction error and a highly non-smooth motion vector field. Encoding blocks of P-frames and B-frames as intra blocks can be used to attenuate the effect of the large prediction error. In a preferred embodiment, however, a new group of frames beginning with an I-frame is formed at each hard-to-code frame.").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a retransmission unit that only retransmits packets when the frame detector detects an I-frame as taught by Mead in the apparatus as in Fukushima et al. in view of Rey et al. for the purpose of only retransmitting the highest priority packets.

9. Claim 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al. (U.S. Patent # 6732313) in view of Rey et al. (U.S. Pub. # 2005/0036546) as applied to claim 15 above, and further in view of Aweya et al. (U.S. Pub. # 2002/0188648).

Consider claim 18, and as applied to claim 15, Fukushima et al. clearly disclose the limitations recited in parent claim 15, and further discloses that the retransmission function unit having retransmission buffer storing packets belonging to the I-frame (see "storing, as retransmission data, only data of packets the priorities of which are equal to

or higher than a predetermined value, in a retransmission buffer” recited in Fukushima, column 2, line 33-36). Fukushima et al. and Rey et al. do not disclose the retransmission buffer has a window size equal to a number of packets belonging to the I-frame. However, Aweya discloses retransmission having a window size of several packets (which reads on “a window size of a number of packets”, and belonging to the I-frame since Fukushima’s retransmission buffer stores only high priority frames, which could be I-frames, as explained in the rejection applied to claim 15).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a retransmission unit that only retransmits packets when the frame detector detects an I-frame as taught by Aweya et al. in the apparatus as in Fukushima et al. in view of Rey et al. for the purpose of only retransmitting the highest priority packets.

Allowable Subject Matter

10. Claim 19 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claim 6-13 and 20-21 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ju-Tai Kao whose telephone number is (571)272-9719. The examiner can normally be reached on Monday ~Friday 7:30 AM ~5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on (571)272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ju-Tai Kao



KWANG BIN YAO
SUPERVISORY PATENT EXAMINER

